

Patent Claims

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- 5 1. Zinc oxide gels comprising nanosize zinc oxide particles having an average primary particle diameter of ≤ 15 nm, water and alcohol, which are re-dispersible in organic solvents and/or water, optionally with the addition of surface-modifying compounds, to give sols.
- 10 2. Zinc oxide gels according to Claim 1, characterized in that they comprise from 0.01 to 3 mol% of foreign ions, based on the proportion of zinc.
- 15 3. Process for the preparation of zinc oxide gels according to Claim 1 by basic hydrolysis of at least one zinc compound in alcohol or an alcohol/water mixture, characterized in that the precipitate which initially forms during hydrolysis is left to mature until the zinc oxide has completely flocculated, then this precipitate is thickened to give a gel and separated off from the supernatant phase.
- 20 4. Process for the preparation of zinc oxide gels according to Claim 2 by basic hydrolysis of at least one zinc compound in alcohol or an alcohol/water mixture, characterized in that the precipitate which initially forms during hydrolysis is left to mature until the zinc oxide has completely flocculated, then this precipitate is thickened to give a gel and separated off from the supernatant phase and that prior to, during or after precipitation, from 0.01 to 3 mol% of foreign ions, based on the proportion of zinc, are added.
- 25 5. Process according to one or more of Claims 3 and 4, characterized in that the zinc compound is zinc acetate and/or zinc acetate dihydrate.
- 30 6. Process according to Claim 5, characterized in that the zinc acetate and/or zinc acetate dihydrate is prepared from zinc oxide in an upstream process.
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7. Process according to one or more of the preceding Claims 3 to 6, characterized in that the hydrolysis is carried out with substoichiometric amounts of base, based on the zinc compound.
- 5 8. Zinc oxide sols obtainable by redispersion of zinc oxide gels according to Claim 1 or 2 in organic solvents and/or water, optionally with the addition of surface-modifying compounds.
- 10 9. Zinc oxide sols according to Claim 8, characterized in that the solvent is dichloromethane and/or chloroform.
- 10 10. Zinc oxide sols according to Claim 8, characterized in that the solvent is water or a water/ethylene glycol mixture which optionally comprises surface-modifying compounds.
- 15 11. Process for the preparation of zinc oxide sols according to one or more of the preceding Claims 8 to 10, characterized in that zinc oxide gels according to Claim 1 or 2 are redispersed in organic solvents and/or water, optionally with the addition of surface-modifying compounds.
- 20 12. Process for the preparation of zinc oxide sols according to Claim 9 by basic hydrolysis of at least one zinc compound in alcohol or an alcohol/water mixture, characterized in that the precipitate which initially forms during hydrolysis is left to mature until the zinc oxide has completely flocculated, and this precipitate is redispersed by adding dichloromethane and/or chloroform.
- 25 13. Use of zinc oxide gels according to Claim 1 and 2 for the matrix modification of polymers, paints and coatings, as an improved vulcanization activator for rubbers and latices, for the UV protection of polymers, paints and coatings, and for the UV protection of sensitive organic dyes and pigments.
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- 5 14. Use of zinc oxide sols according to Claims 8 to 10 for the matrix modification of polymers, paints and coatings, as an improved vulcanization activator for rubbers and latices, for the UV protection of polymers, paints and coatings, and for the UV protection of sensitive organic dyes and pigments.

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